

## Evolution of Bodies at the Poles

75

the acid, and found no other substance with which it could combine,, it appeared in its proper character, and was no longer able to continue its progress towards the negative pole.

270. The theory I have ventured to put forth appears to me to explain all the prominent features of electro-chemical decomposition in a satisfactory manner.

271. In the first place, it explains why, in all ordinary cases, the evolved substances *appear only at the poles*; for the poles are the limiting surfaces of the decomposing substance, and except at them, every particle finds other particles having a contrary tendency with which it can combine.

272. Then it explains why, in numerous cases, the elements or evolved substances are not *retained* by the poles; and this is no small difficulty in those theories which refer the decomposing effect directly to the attractive power of the poles. If, in accordance with the usual theory, a piece of platina be supposed to have sufficient power to attract a particle of hydrogen from the particle of oxygen with which it was the instant before combined, there seems no sufficient reason, nor any fact, except those to be explained, which show why it should not, according to analogy with all ordinary attractive forces, as those of gravitation, magnetism, cohesion, chemical affinity, etc., *retain* that particle which it had just before taken from a distance and from previous combination. Yet it does not do so, but allows it to escape freely. Nor does this depend upon its assuming the gaseous state, for acids and alkalies, etc., are left equally at liberty to diffuse themselves through the fluid surrounding the pole, and show no particular tendency to combine with or adhere to the latter. And though there are plenty of cases where combination with the pole does take place, they do not at all explain the instances of non-combination, and do not therefore in their particular action reveal the general principle of decomposition.

273. But in the theory that I have just given, the effect appears to be a natural consequence of the action: the evolved substances are *expelled* from the decomposing mass (254, 255), not *drawn out by an attraction* which

ceases to act on one  
particle without any assignable reason,  
while it continues to act  
on another of the same kind: and  
whether the poles be metal,  
water, or air, still the substances are  
evolved, and are sometimes  
set free, whilst at others they unite to  
the matter of the poles,  
according to the chemical nature of the  
latter, *i.e.* their chemical